Alpine School District 3-17 (4300731182)
Alpine School District 6-17 (4300731181)

UIC INJECTION PERMIT ANALYSIS FORM

FOLLOW-UP RESPONSE

Date: 4/15/10

Following are responses to comments regarding UIC Form 1 submitted by Marion Energy, Inc. on 3/1/2010.

2.5: See attached wellbore schematic with present and proposed wellbore schematics.

2.6: The injected fluid shall be produced water from multiple wells within the Clear Creek Federal Unit, all having a source of water from the Ferron Sandstone. Estimated daily injection volume is 2,000 bwpd, increasing to 15,000 bwpd as additional wells are brought online. Estimated daily average injection pressure is 0 (zero) psig, maximum surface injection pressure is 400 psig.

2.7: Produced and injected water samples are to be submitted separately. Mixing ratios for produced water to injected water is proposed to be 25/75, 50/50, 75/25. The analysis shall include TDS and scaling tendency.

2.8: Estimated daily average injection pressure is 0 (zero) psig, maximum surface injection pressure is 400 psig.

2.9: Cross sections provided by Marion Energy, Inc. demonstrate confining shale barriers above and below the Ferron member of the Mancos Formation. The shales above the Ferron belong to the Bluegate Shale Member of the Mancos Formation and those below belong to the Tunuck Shale Member of the Mancos Formation. Both shales have considerable thickness and are known to be regionally pervasive. These characteristics are considered in lieu of an initial step rate test. The impermeable nature of the shales is suitable for the confinement of the injectate within the Ferron Sandstone. It is also anticipated the ASD 3-17 will have zero surface injection pressure during early period injection. This will not allow delta P vs delta Q to be plotted accurately. Marion proposes an initial Maximum Surface Injection pressure of 400 psig, and could perform a step rate test if the well demonstrates stabilized positive pressure before 400 psig is achieved.

2.10: At the request of the DOGM the originally submitted geologic displays were augmented to improve clarity for the viewer. Paper and digital (PDF) copies of the displays are included and it should be noted the PDF files when zoomed in show better clarity of the log curves then do the paper copies. The following displays are being resubmitted for approval

SUBSTITUTE
EXHIBIT E

1) Ferron structure map of the northern two-thirds of the Clear Creek Federal Unit showing cross-section lines North-South and West-East.

2) Structural cross-sections North-South and West-East illustrating the structural position of the Ferron Sandstone between the known confining shales of the Bluegate and Tunuck and the structural position of the known fresh-water bearing formations of the Star Point and Blackhawk.

3) Detailed stratigraphic correlations (A-A' and B-B') of the Ferron Formation showing lateral continuity.

4) Single well log strips showing digital log curves for the ASD #6-17 and ASD #3-17. Due to the deviated nature of both wells they were logged with cased-hole tools only.

2.11: A review of wells within a ½ mile radius of the prospective injection candidates yield the following:

Alpine School District 3-17:
Two wellbores are within an ½ mile radius of the bottom hole location and/or the surface location:

a) ASD 6-17 original hole
b) ASD 6-17 sidetrack hole

Alpine School District 6-17 sidetrack:
Three wellbores are within an ½ mile radius of the bottom hole location and/or the surface location:

a) ASD 6-17 original hole
b) ASD 3-17
c) Utah Fuel #7

The mechanical condition of each well within a ½ mile radius is sufficient to prevent fluid migration up or down the wellbore into improper intervals. For all the wells listed above, the Ferron Sand is bound from below by the Tunuck Shale and above by the Bluegate Shale. There are no conduits created within these wellbores to allow fluids to escape from the limits of these sealing shale members. The Ferron Sand, and Tunuck and Bluegate Shales are members within the regionally pervasive Mancos Formation.

The ASD 6-17 original hole was plugged back with 325 sacks cement in two stages; top of plug tagged each time. The plug covers 1,242' inside the Bluegate Shale from kickoff point at 2,350' to 3,565'. The TD of the original hole is in the Ferron Sand and is filled with 11.6 #/g mud from 3,565' to 5,164' (TD).

The ASD 6-17 sidetrack hole is completed with a 5-1/2" liner from 2,009' – 5,825' and cemented with 291 sacks cement. Cement bond quality of greater than 90% from 3,670' – 5,825', which includes the entire completed interval of the Ferron Sand. Additionally, the top of the 5-1/2" liner overlaps 252' into the 7-5/8" casing, which is cemented with 340 sacks cement and 695' of bond quality greater than 90%.

The ASD 3-17 is completed with 7" casing from surface to 5,311' and cemented with 750 sacks cement. Cement bond quality is greater than 90% from 2,500' – 5,311', which includes the entire completed interval of the Ferron Sand. Additionally, a 9-5/8" casing string runs from surface to 3,142' and is cemented to surface with 695 sacks cement. The 9-5/8" casing penetrates the Bluegate Shale by 840'.

The Utah Fuel #7 well was plugged and abandoned in July 1987. The wellbore has two inside casing cement plugs above the Ferron Sand; bottom plug 3,132' – 3,790' (658') and top plug surface to 658' (658'). The Ferron Sand is further isolated with two casing strings cemented in the hole; a) 4-1/2" liner from surface to 4,063' and cemented with 200 sacks cement, and b) 7" casing string from surface to 3,865' and cemented with 850 sacks cement.

Additional Considerations:
The proposed injection operations into the Ferron Sand of the ASD 3-17, ASD 6-17, provide no EOR, pressure maintenance, or other secondary recovery benefit to the gas hydrocarbon resource that may be present in the Ferron Sand. All natural gas recovery from the Ferron Sand in the Clear Creek Unit to date (primarily in the 1950's and 60's) has been a result of volumetric depletion. The location of the ASD 3-17 and ASD 6-17 provide for disposal of water into existing wells located in an isolated fault block. No deleterious effects are expected since water production has been present whenever gas has been produced since inception within the naturally fractured Ferron Sand. Ferron water being injected and allowed to comingle with Ferron water already present in the natural fractured sandstone will create no additional reservoir impacts than exist within the Ferron in its current natural state.

It is expected that with improved economic conditions and positive production response from the continuous dewatering of existing wells, a dedicated disposal well option outside of the Ferron may be economic in the future. Opportunities to expand dewatering to include all areas of the Ferron within Clear Creek would be attractive at that time.

Saturation Index Calculations

Champion Technologies, Inc.

(Based on the Tomson-Oddo Model - CO2 in Brine)

Marion Energy

Clear Creek

Brine 1 : Alpine School District: Well # 3-17

Brine 2 : Alpine School District: Well # 6-17

Brine 3 : Ridge Runner: Well # 13-17

Brine 3 : Olman: Well # 2-20

Sample Date	Comments
April 12, 2010	
April 12, 2010	
April 12, 2010	
April 12, 2010	

Component		Brines to be mixed				Mixing Ratio as %									
		Brine 1				25	10	40	20	30	30	30	35	25	10
			Brine 2			25	20	30	10	30	35	20	25	30	20
				Brine 3		25	30	20	40	10	5	10	15	20	50
					Brine 4	25	40	10	30	30	30	40	25	25	20
Calcium, Ca^{+2}	mg/l	30	37	16	39	31	31	30	28	33	34	34	32	32	26
Magnesium, Mg^{+2}	mg/l	12	10	3	12	9	9	10	8	11	11	11	10	10	7
Barium, Ba^{+2}	mg/l	8	13	10	0	8	6	9	7	7	7	6	8	8	8
Strontium, Sr^{+2}	mg/l	5	4	2	5	4	4	4	4	4	5	5	4	4	3
Carbonate, CO_3^{-2}	mg/l	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicarbonate, HCO_3^{-1}	mg/l	2,037	1,898	2,037	2,006	1,995	1,997	1,992	2,014	1,986	1,979	1,997	1,995	1,988	2,003
Sulfate, SO_4^{-2}	mg/l	28	27	6	14	19	16	22	15	21	22	20	21	20	14
Chloride, Cl_2	mg/l	2,680	3,100	1,102	3,100	2,496	2,459	2,532	2,217	2,774	2,874	2,774	2,653	2,595	2,059
CO_2 in Brine	mg/l	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Ionic Strength		0.11	0.12	0.07	0.12	0.10	0.10	0.11	0.10	0.11	0.12	0.11	0.11	0.11	0.09
Temperature	°F	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Pressure	psia	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tomson-Oddo Saturation Index															
Calcite; $CaCO_3$		-0.47	-0.48	-0.57	-0.41	-0.44	-0.44	-0.49	-0.48	-0.45	-0.47	-0.44	-0.46	-0.47	-0.46
Gypsum; $CaSO_4$-$2H_2O$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hemihydrate; $CaSO_4$-$1/2H_2O$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anhydrite; $CaSO_4$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barite; $BaSO_4$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Celestite; $SrSO_4$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P(Pounds Per)**T**(Thousand)**B**(Barrels)															
Calcite; $CaCO_3$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gypsum; $CaSO_4$-$2H_2O$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hemihydrate; $CaSO_4$-$1/2H_2O$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anhydrite; $CaSO_4$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barite; $BaSO_4$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Celestite; $SrSO_4$		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Summary of Clear Creek Water Analysis Reports (updated 4/22/10)							
Location	**Date Sampled**	**Source**	**Sg grams/ml**	**TDS ppm (* mg/L)**	**Sodium mg/l**	**Chloride mg/l**	**Bicarbonate mg/l**
Alpine School District 6-17	1/12/2009	wellhead	1.005	11,021	3,710	4,040	2,928
Alpine School District 6-17	2/24/2010	wellhead	1.007	5,562	1,781	1,544	2,184
Alpine School District 6-17	4/12/2010	wellhead	N/A	*5,984	N/A	*2,538	*1,520
Alpine School District 3-17	1/12/2009	wellhead	1.005	8,549	2,853	3,040	2,440
Alpine School District 3-17	4/12/2010	wellhead	N/A	*5,741	N/A	*2,315	*1,664
Ridge Runner 2-19	8/7/2008	wellhead	1.010	9,791	3,480	4,320	1,908
Ridge Runner 13-17	5/22/2007	wellhead	N/A	*3,848	N/A	N/A	3,284
Ridge Runner 13-17	5/24/2007	wellhead	N/A	*7,256	2,460	2,999	1,595
Ridge Runner 13-17	2/9/2010	wellhead	N/A	*3,735	N/A	N/A	1,462
Ridge Runner 13-17	4/12/2010	frac tank	N/A	*3,618	N/A	*1,059	*1,665
Utah Fuel 8	2/24/2009	wellhead	1.010	5,042	1,864	2,800	280
Utah Fuel 8	4/2/2009	wellhead	1.005	12,477	4,550	5,960	1,903
Oman 2-20	1/11/2002	wellhead	N/A	*5,321	2,075	2,000	2,342
Oman 2-20	1/26/2010	wellhead	N/A	*6,243	N/A	N/A	N/A
Oman 2-20 (via ASD 3-17)	3/9/2010	wellhead	1.005	4,776	1,509	1,140	2,098
Walton 1X	4/29/1963	Sep. Dump	1.002	3,780	1,263	1,220	1,287

previously submitted water analysis reports in yellow